

**DRAFT ENVIRONMENTAL RESTORATION
RFCA STANDARD OPERATING PROTOCOL
FOR ROUTINE SOIL REMEDIATION
FY03 NOTIFICATION #03-01
IHSS 111.4, TRENCH 7**



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ACRONYMS

AL	action level
AOC	area of concern
BZ	Buffer Zone
BZ SAP	Buffer Zone Sampling and Analysis Plan
DOE	Department of Energy
ER	Environmental Restoration
ER RSOP	Environmental Restoration RSOP for Routine Soil Remediation
FY	Fiscal Year
IA	Industrial Area
IHSS	Individual Hazardous Substance Site
IMP	Integrated Monitoring Program
PAC	Potential Area of Concern
PCOC	potential contaminant of concern
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RSOP	RFCA Standard Operating Protocol
VOC	volatile organic compound

1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002a) Fiscal Year (FY) 03 Notification includes the notification to remediate an Individual Hazardous Substance Site (IHSS) in the Rocky Flats Environmental Technology Site (RFETS) Buffer Zone (BZ) during FY03. The purpose of this Notification is to invoke the ER RSOP for IHSS Group NE-2, IHSS 111.4 (Trench T-7). Activities specified in the ER RSOP are not reiterated here; however deviations from the ER RSOP are noted where appropriate. The location of IHSS Group NE-2, IHSS 111.4 (Trench T-7) is shown Figure 1.

2.0 IHSS 111.4, TRENCH 7

Trench T-7 is located approximately 1,400 feet east of the inner east guard gate and 290 feet south of the East Access Road. It is part of several trenches referred to as the East Trenches (DOE 1992). The trench was used primarily for the disposal of sanitary wastewater treatment plant sludge. Flattened empty drums and asphalt planking from the Solar Evaporation Ponds, both of which may be potentially contaminated with uranium and plutonium, also may have been disposed in the trench. In addition, it is believed that water and lathe coolant generated in Building 444 was disposed in one of the East Trenches. T-7 is approximately 115 feet long, 14 to 16 feet wide and 10 feet in depth, and is covered with two feet of soil cover. The volume of waste material in the trench is estimated to be 798 cubic yards.

2.1 Potential Contaminants of Concern

Contaminants of concern (COCs) at IHSS 111.4 were determined based on process knowledge and data collected during previous studies (DOE 1992, DOE 1996). COCs include plutonium, americium, uranium, metals, and volatile organic compounds (VOCs). Results from previous sampling activities are presented in Figure 2, which presents results greater than background mean plus two standard deviations or the detection limit. Results indicate that some contaminant concentrations exceed RFCA action levels (ALs) (e.g., plutonium-239/240, americium-241, and arsenic). Two out of 10 boreholes exceeded plutonium and americium ALs (Locations 11895 and 12095 between 3 and 5 feet), and one location barely exceeded the arsenic AL (Location BH4887 between 6 and 7 feet).

2.2 Project Conditions

The following conditions are present at this site:

- Trench 7 (IHSS 111.4) is surrounded by other trenches, including Trench 5 (IHSS 111.2), Trench 6 (IHSS 111.3), Trench 8 (IHSS 111.5), and Trench 9 (IHSS 111.6);
- The eastern end of IHSS 111.6 abuts the western end of IHSS 111.4;
- The East Spray Field South Area is located to the east of IHSS 111.4;
- The area is relatively flat and covered by grass; and
- The area to the south slopes down towards Women Creek.

2.3 Remediation Plan

This RSOP Notification remediation plan for IHSS 111.4, Trench T-7 includes the following objectives:

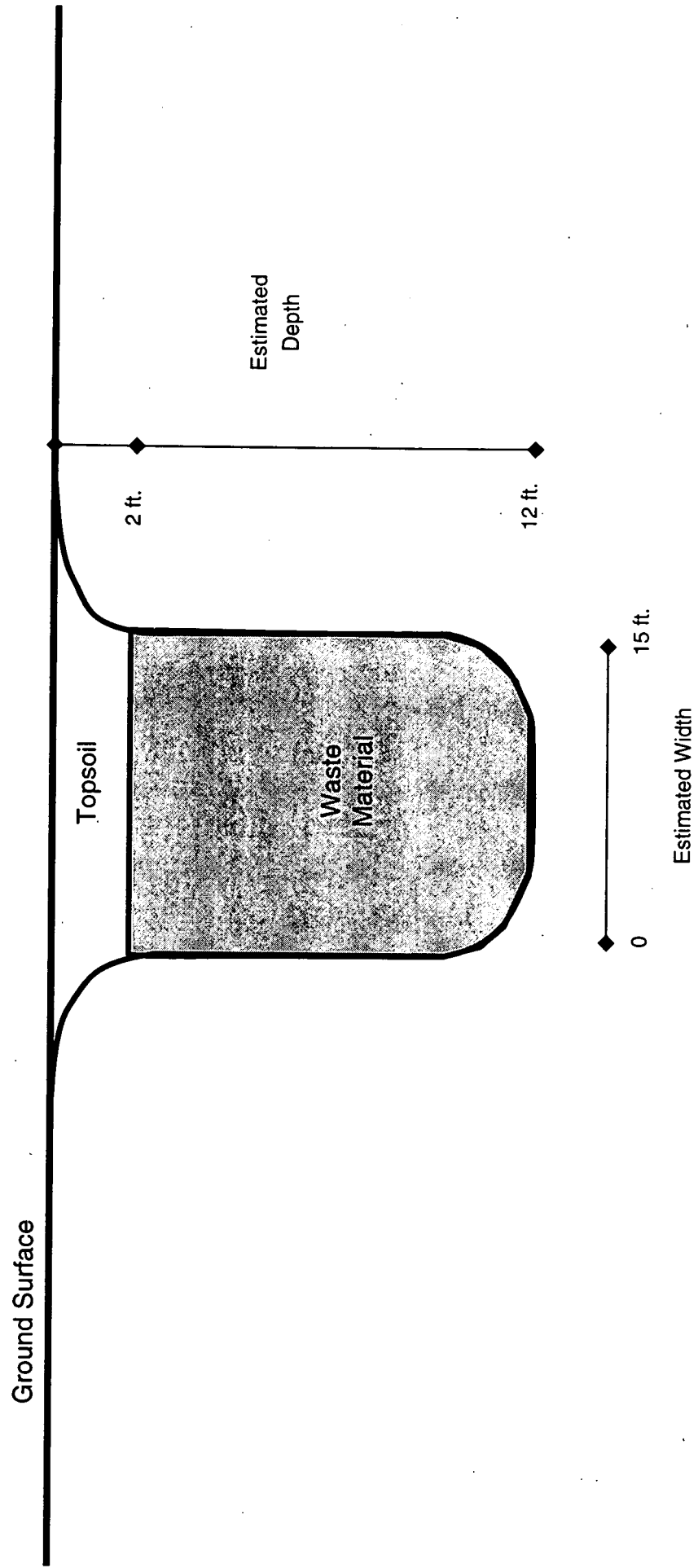
- Remove all waste material from the trench (estimated at 798 cubic yards) and dispose of offsite;
- Collect confirmation samples from the excavation in accordance with the Buffer Zone Sampling and Analysis Plan (BZSAP) (DOE 2002b);
- Remove soils at the trench boundary (i.e., trench side walls and bottom) with concentrations equal to or exceeding RFCA ALs; and
- Backfill the excavation with clean fill, grade and seed the area.

A cross-section of Trench T-7, showing the waste material, is shown in Figure 3. It is anticipated that after remediation there will be areas at the site with concentrations of radionuclides, organics and metals greater than background mean plus two standard deviations or method detection limits, but below RFCA ALs.

2.4 Stewardship Evaluation

Based on the COCs (Section 2.1) and the ER RSOP (DOE 2002a), it is anticipated that all contamination above RFCA ALs will be remediated. Because the full extent of excavation and remediation is not known at this time, an additional stewardship evaluation will be conducted during remediation using the consultative process. A map of residual contamination will be generated after remediation. The following sections present the stewardship evaluation.

Figure 3 - Cross-Section of Trench T-7



2.4.1 Proximity to Other Contaminant Sources

IHSS 111.4, Trench T-7 is part of the East Trenches, which are located in the RFETS BZ on both sides of the East Access Road and east of the inner east guard gate. The trench is surrounded by other trenches, including Trench 5 (IHSS 111.2), Trench 6 (IHSS 111.3), Trench 8 (IHSS 111.5), and Trench 9 (IHSS 111.6) (refer to Figure 2). The eastern end of Trench 9 abuts the western end of Trench 7. These trenches have similar histories and the same COCs (DOE 1992). The East Spray Field South Area (PAC NE-216.3) is located to the east of Trench 7. COCs include beryllium in surface soil samples and methylene chloride in subsurface soil samples.

2.4.2 Surface Water Protection

Surface water protection includes the following considerations:

Is there a pathway to surface water from potential erosion to streams or drainages?

Trench T-7 is in a flat-lying area not prone to erosion. Waste material is covered by approximately two feet of soil. Runoff from the area flows into the South Interceptor Ditch, via the East Spray Field Interceptor Channel, and then into Pond C-2. Water from Pond C-2 is monitored prior to discharge.

Do characterization data indicate there are contaminants in surface soil?

Data on surface soil contaminants are not available. Waste material is covered by approximately two feet of soil.

Do monitoring results from Points of Evaluation (POEs) or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?

The POEs and POCs downstream of T-7 also monitor contaminants from the South Interceptor Ditch, which receives runoff from the southern part of the Industrial Area (IA). Therefore, it is not possible to determine if contaminants detected are from the T-7 area or from the IA.

Is the IHSS Group in an area with high erosion potential, based on the 100-Year Average Erosion Map?

IHSS 111.4 is not located in an area with a high erosion potential. The 100-Year Average Erosion Map (Figure 11, DOE 2002a) indicates that IHSS 111.4 is located in an area designated as "No Disposition or Detachment".

2.4.3 Monitoring

Monitoring includes the following considerations:

Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?

Groundwater samples taken from the trench area in 1992 contained VOCs at concentrations greater than RFCA ALs (see Table 1). Recent groundwater data from two Plume Extent Wells near Trench T-7 (i.e., Wells 04591 and 10194) indicate no reportable

RFCA AL exceedances (DOE 2002c). The two wells had non-reportable uranium-233/234 and uranium-238 concentrations that were above ALs. Results for all uranium isotopes were below their respective background mean plus two standard deviations.

Based on water level data, the wells in Trench T-7 are routinely dry, so contaminant migration is expected to be limited. It does not appear that contaminants from Trench T-7 would impact downgradient groundwater quality and surface water quality at POEs and POCs.

Table 1. Groundwater Concentrations Exceeding Action Levels

Well	Sample Number	Collection Date	Analyte	Results (mg/L)	Detection Limit (mg/L)	Action Level (mg/L)
8391	GW034781T	9/3/92	Carbon tetrachloride	0.009	0.0001	0.005
8391	GW034781T	9/3/92	Tetrachloroethene	0.32	0.00014	0.005
8391	GW034781T	9/3/92	Trichloroethene	0.022	0.00028	0.005

Source: DOE 1996.

Can the impact be traced to a specific IHSS Group?

Impacts on groundwater quality could be from multiple sources.

Are additional monitoring stations needed?

No; there are sufficient wells in the area.

Can existing monitoring locations be deleted if additional remediation is conducted?

No. Monitoring will still be required to evaluate groundwater quality in the area.

2.4.4 Stewardship Actions and Recommendations

The current stewardship actions and recommendations for IHSS Group NE-2 are as follows:

- Use Best Management Practices to reduce erosion into surface water drainage (Section 7.2 of the ER RSOP).
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following:
 - Signs and barriers;
 - Restrictions on soil excavation; and
 - Soil excavations controlled through the Site Soil Disturbance Permit process.
- Implement long-term stewardship actions, including the following:
 - Continuing Federal ownership and control over the Site; and

- Land use restrictions to prevent soil excavation that could access or disturb residual contamination. Specific land use restrictions will be discussed in the Site Long-Term Stewardship Plan and evaluated along with other institutional controls for implementation in the final remedy selection process.

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions.

2.5 Accelerated Action Remediation Goals

ER RSOP remedial action objectives include the following:

1. Provide a remedy consistent with the RFETS goal of protection of human health and the environment;
2. Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls; and
3. Minimize the spread of contaminants during implementation of accelerated actions.

The accelerated action remediation goals for IHSS 111.4, Trench 7 include the following:

- Remove all waste material from the trench (approximately 798 cubic yards) and dispose of offsite;
- Conduct confirmation sampling and remove soils at the trench boundary (i.e., trench side walls and bottom) with concentrations equal to or exceeding RFCA ALs; and
- Reclaim the site to enable use as a wildlife refuge.

2.6 Treatment

Not applicable.

2.7 Project-Specific Monitoring

Environmental monitoring, including downstream surface water and downgradient groundwater monitoring, will be conducted as part of the Integrated Monitoring Program (IMP) to ensure that contaminant concentrations are not increasing and that water quality standards are being met (DOE 2001).

Project-specific surface water, groundwater, and air monitoring during remediation will be planned through the IMP process. Additional air monitoring will be conducted in accordance with Work Controls in order to document the absence of airborne activity. Potential locations of air monitors are shown on Figure 3.

2.8 Intended Waste Disposition

It is anticipated that most of the waste from Trench T-7 will be classified and disposed of as low level or low level mixed waste.

2.9 Administrative Record Documents

DOE, 1992, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado, June.

DOE, 1995, Phase II RFI/RI, 903 Pad, Mound and East Trenches Area, OU 2, Rocky Flats Environmental Technology Site, Golden, Colorado, April.

DOE, 1996, Trenches and Mound Site Characterization Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 1997, Annual Update for the Historical Release Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2001, Rocky Flats Environmental Technology Site, Integrated Monitoring Plan, Golden, Colorado.

DOE, 2002, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

DOE, 2002, Buffer Zone Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE 2002, Third Quarter RFCA Groundwater Monitoring Report for Calendar Year 2001, Rocky Flats Environmental Technology Site, Golden, Colorado, February.

2.10 Projected Schedule

Remediation of IHSS 111.4, Trench T-7 will begin in the third or fourth quarter of FY03.

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #03-01 activities will probably be discussed at the October 2002 ER/Decontamination and Decommissioning Status meeting. This Notification is available at the Rocky Flats Reading Rooms.

4.0 REFERENCES

DOE, 1992, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado, June.

DOE, 1996, Trenches and Mound Site Characterization Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 1997, Annual Update for the Historical Release Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2001, Rocky Flats Environmental Technology Site, Integrated Monitoring Plan, Golden, Colorado.

DOE, 2002a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

DOE, 2002b, Buffer Zone Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE 2002c, Third Quarter RFCA Groundwater Monitoring Report for Calendar Year 2001, Rocky Flats Environmental Technology Site, Golden, Colorado, February.

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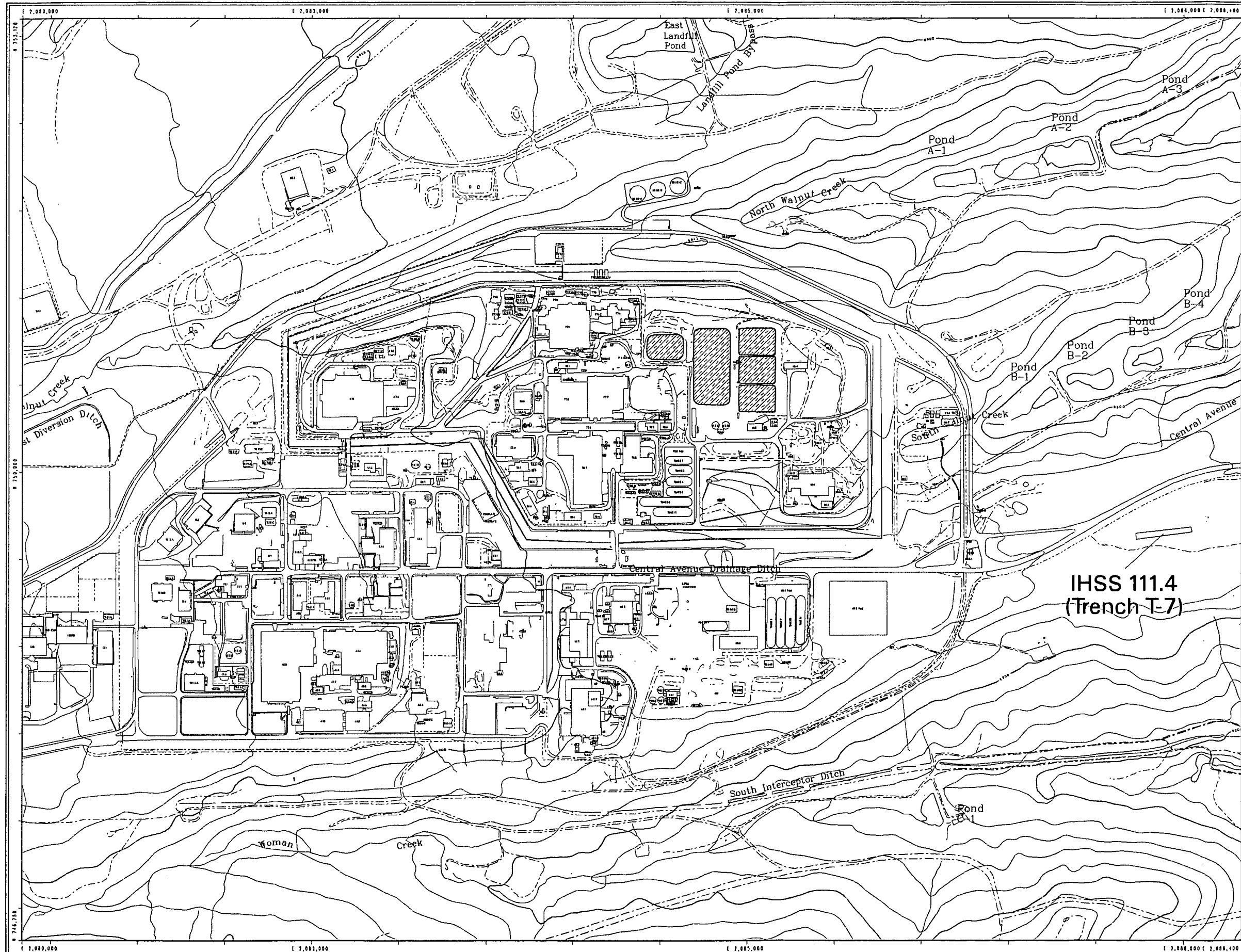


Figure 1
IHSS Location Map

EXPLANATION

- IHSS
- Standard Map Features**
- Buildings and other structures
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Topographic Contour (20-Foot)
- Rocky Flats Environmental Technology Site boundary
- Paved roads
- Dirt roads

DATA SOURCE BASE FEATURES:
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas. Digitized from the orthorectified 1955 topographic map. Topographic contours were derived from digital elevation model (DEM) data by Morrison Knudsen (MK) using ESRI Arc TIN and LATICE to process the DEM data to create 5-foot contours. The DEM data was captured by the Remote Sensing Lab, Las Vegas, NV, 1994. Aerial Photos at 10 meter resolution. DEM post-processing performed by MK, Winter 1997.



Scale = 1 : 8180
1 inch represents approximately 682 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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October 29, 2002

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